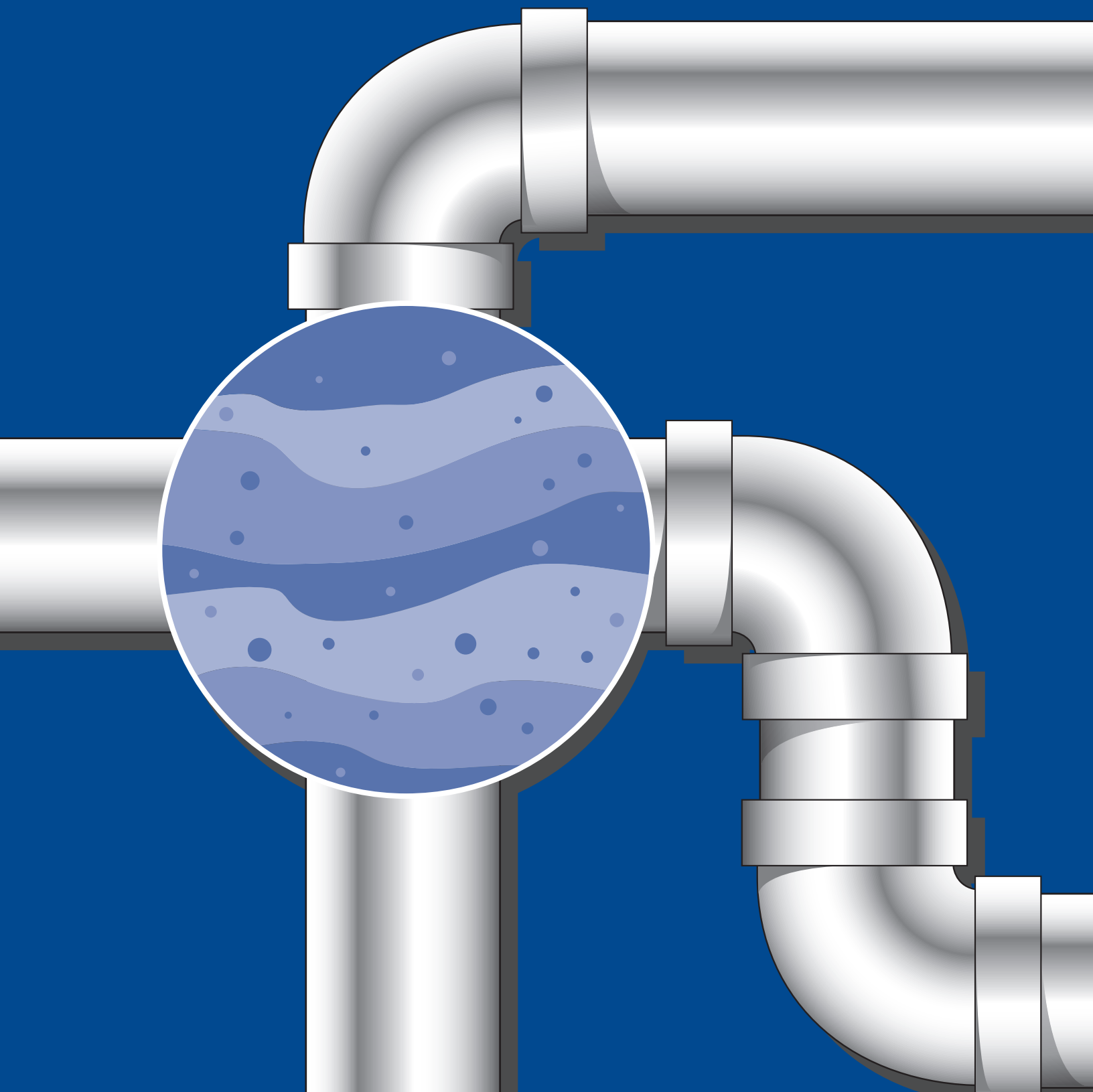
Cross-Connection Control Manual



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Cross-Connection Control Manual

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Preface

Plumbing cross-connections, which are defined as actual or potential connections between a potable and non-potable water supply, constitute a serious public health hazard. There are numerous, well-documented cases where cross-connections have been responsible for contamination of drinking water, and have resulted in the spread of disease. The problem is a dynamic one, because piping systems are continually being installed, altered, or extended.

Control of cross-connections is possible, but only through thorough knowledge and vigilance. Education is essential, for even those who are experienced in piping installations fail to recognize cross-connection possibilities and dangers. All municipalities with public water supply systems should have cross-connection control programs. Those responsible for institutional or private water supplies should also be familiar with the dangers of cross-connections and should exercise careful surveillance of their systems.

This *Cross-Connection Control Manual* has been designed as a tool for health officials, waterworks personnel, plumbers, and any others involved directly or indirectly in water supply distribution systems. It is intended to be used for educational, administrative, and technical reference in conducting cross-connection control programs. This manual is a revision of an earlier book entitled *Water Supply and Plumbing Cross-Connections* (PHS Publication Number 957), which was produced under the direction of Floyd B. Taylor by Marvin T. Skodje, who wrote the text and designed the illustrations.

Many of the original illustrations and text have been retained in this edition. Previous revisions were done by Peter C. Karalekas, Jr. with guidance from Roger D. Lee incorporating suggestions made by the staff of the EPA Water Supply Division, other governmental agencies, and interested individuals.

This 3rd edition was produced as a result of an updated need for cross-connection control reference material reflecting an increase in cross-connection control activity throughout the United States. It has been revised and re-issued reflecting a demand for its use, together with requests for a document that covers the broad spectrum of cross-connection control from both the basic hydraulic concepts through the inclusion of a sample program that can be a guide for a program at the municipal level. New backflow devices have been included in this revision that are now being produced by manufacturers reflecting the needs of the market. Updated actual cross-connection case histories have been added containing graphic schematic illustrations showing how the incidents occurred and how cross-connection control practices could be applied to eliminate future re-occurrence. A more detailed explanation of cross-connection control "containment" practice has been included together with the use for "internal backflow protective devices" and "fixture outlet protection".

This 1989 edition was prepared by Howard D. Hendrickson, PE, vice president of Water Service Consultants, with assistance from Peter C. Karalekas, Jr. of Region 1, EPA, Boston.

This latest (2003) edition has technical corrections provided by Howard D. Hendrickson, P.E., showing updates on pages iv, 18, 23, 30, 31, and 32.

Contents

An AWWA Statement of Policy on Public Water Supply Matters.

Cross Connections

Adopted by the Board of Directors Jan. 26, 1970, revised June 24, 1979, reaffirmed June 10, 1984 and revised Jan. 28, 1990 and Jan. 21, 2001.

The American Water Works Association (AWWA) recognizes water purveyors have the responsibility to supply potable water to their customers. In the exercise of this responsibility, water purveyors or other responsible authorities must implement, administer, and maintain ongoing backflow prevention and cross-connection control programs to protect public water systems from the hazards originating on the premises of their customers and from temporary connections that may impair or alter the water in the public water systems. The return of any water to the public water system after the water has been used for any purpose on the customer's premises or within the customer's piping system is unacceptable and opposed by AWWA.

The water purveyor shall assure that effective backflow prevention measures commensurate with the degree of hazard, are implemented to ensure continual protection of the water in the public water distribution system. Customers, together with other authorities are responsible for preventing contamination of the private plumbing system under their control and the associated protection of the public water system.

If appropriate back-flow prevention measures have not been taken, the water purveyor shall take or cause to be taken necessary measures to ensure that the public water distribution system is protected from any actual or potential backflow hazard. Such action would include the testing, installation, and continual assurance of proper operation and installation of backflow-prevention assemblies, devices, and methods commensurate with the degree of hazard at the service connection or at the point of cross connection or both. If these actions are not taken, water service shall ultimately be eliminated.

To reduce the risk private plumbing systems pose to the public water distribution system, the water purveyor's backflow prevention program should include public education regarding the hazards backflow presents to the safety of drinking water and should include coordination with the cross connection efforts of local authorities, particularly health and plumbing officials. In areas lacking a health or plumbing enforcement agency, the water purveyor should additionally promote the health and safety of private plumbing systems to protect its customers from the hazards of backflow.